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ABSTRACT

The present-day German Fachhochschulen were established following an agreement on standardization of the Fachhochschule system throughout the Federal Republic of Germany in October 1968. The primary mission of Fachhochschulen is to provide short-term, more practice-related courses with a scientific or artistic basis, particularly in the fields of engineering, economics, social science, agriculture and nutrition, and design. Students entering a Fachhochschule must have completed the equivalent of the 11th grade; students who have completed 12 or 13 grades are allowed to enter the second year of the program. Courses of study have been arranged so that they can be completed in 3 to 3.5 years. As of 1986, 122 of the 242 institutions of higher education in the Federal Republic of Germany were Fachhochschulen. They accounted for 20.4 percent of the total enrollees in higher education. The Fachhochschulen are generally regarded as an indispensable part of the higher education system. Although not intended to educate people for the country's top positions, Fachhochschulen prepare graduates for a broad spectrum of professional opportunities. (MN)

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MORE PRACTICE FOR FUTURE PROFESSION

The Fachhochschulen in the Federal Republic of Germany

CE 050702

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Basic features

Historical Development

Gleich sei keiner dem anderen,
doch gleich sei jeder dem Höchsten.
Wie das zu machen?
Es sei jeder vollendet in sich.

(Let no-one be equal to the other,
But let all be equal to the highest.
How can this be achieved?
Let everyone be consummate within himself.)

With this quotation from Goethe, Wilhelm II, German Emperor and King of Prussia, placed the Reich's first technical higher education institution *(Technische Hochschule)* in Berlin on equal footing with universities in 1899. During the applause, the monarch smiled amiably at the gathered assembly. According to eyewitness reports, the rectors and deans, who had come as envoys of the venerable universities in the Reich to convey their congratulations, looked less friendly.

The German *Technische Hochschulen* (Technical Universities/Universities of Technology) and *Fachhochschulen* can look back on the same joint predecessors: the Polytechnic Schools, which were founded in 1825 to meet the increased requirements in the building industry in respect of design, calculations and material control. Towards the middle of the last century, machine-building departments were created at *Ingenieurschulen* (engineering schools) because development in *Handwerk* (crafts, manual trades) had taken a step forward: numerous small workshops had blossomed within a short space of time into factories engaged in series or mass production. Industry, which was growing rapidly at that time, was in great need of engineers with practice-related training.

From the end of the last century, technical teaching institutes *(technische Lehranstalten)* provided scientific, technical training. They were renamed *Ingenieurschulen* in 1938 and developed into *Fachhochschulen* in the 1970s.

The present-day *Fachhochschulen* were established following an agreement between the *Bundesländer* (states) on standardization of the Fachhochschule system in the Federal Republic of Germany on 31 October 1968. The *Ingenieurschulen* and other *höhere Fachschulen* specializing in economics, social work or design, for example, were incorporated into this system. Through further recommendations and agreements by the *Kultusministerkonferenz* (Conference of the Ministers of Education and Cultural Affairs), the *Fachhochschulen* gradually assumed their current concrete form between 1970 and 1980. The *Hochschulrahmengesetz* (Framework Act for Higher Education) of 1976, and its subsequent amendments, as well as the higher education legislation in the *Bundesländer*, have clearly defined the shape and duties of the *Fachhochschulen*. Accordingly, they are higher education institutions — in the same way as universities, *Kunsthochschulen* (art academies), *Musikhochschulen* (music academies), *Pädagogische Hochschulen* (colleges of education), *Medizinische Hochschulen* (colleges of medicine) and *Sporthochschulen* (colleges of Sport).

Legal status — responsibilities — powers

The structure of the Federal Republic of Germany, as its name implies, is federative. Responsibility for education and planning is determined by this pattern. According to the Basic Law/Constitution *(Grundgesetz)* the Federal Government has been awarded certain areas of responsibility, the number and range of which have been clearly set out. The *Bundesländer* have been given general powers for the fulfilment of public responsibilities in the education system *(Bildungswesen)*. This overall responsibility is known as *Kulturhoheit* (cultural sovereignty).

On the strength of this sovereignty, the *Bundesländer* — Baden-Württemberg, Bavaria, Bremen, Hamburg, Hesse, Lower Saxony, Northrhine-Westphalia, the Rhineland-Palatinate, the Saarland and Schleswig-Holstein, and Berlin (West) — are predominantly responsible for the education system. The Federal Government *(Bundesregierung)* enjoys certain legislative powers, above all in the enactment of a framework of provisions for the general principles in the higher education sector, for the advancement of scientific research, training, non-school vocational training and careers advice. For certain duties the Basic Law provides for co-operation between the Federal Government and the *Bundesländer* for the realization of certain commitments delegated to the latter if these duties are of importance for entire population of the Federal Republic and if the cooperation of the Federal Government is requisite for the improvement of the living conditions of all. Among these shared duties in the education system are the expansion of existing higher education institutions and the erection of new ones, including *Hochschulkliniken* (university hospitals).

The Basic Law also provides for collaboration through agreements between the Federal Government and the *Bundesländer* for educational planning and for the advancement of facilities and projects for scientific research of supra-regional importance.

The Basic Law guarantees the freedom to live, travel and choose a career anywhere in the federal area: this freedom is enhanced by collaboration between the *Bundesländer* and with the Federal Government in those sectors where regulations under federal jurisdiction are at hand, in so far as these must be transposed into *Landesrecht* (state-level jurisdiction) in order for then to take effect. This takes place on the one hand through the *Bund-Länder-Kommission für Bildungsplanung und Forschungsförderung* (Bund-Länder Commission for Educational Planning and Advancement of Research/BLK), and on the other, through the *Ständige Konferenz der Kultusminister der Länder in der Bundesrepublik Deutschland* (Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany) — German acronym: KMK. The purpose of this co-operation is to co-ordinate the school and higher education systems in regard to structures, institutions, curricula and leaving certificates. This has resulted in comparability of the education courses provided and the qualifications to be acquired in the educational institutions.

Fachhochschulen as part of the higher education system

With a few exceptions the 242 higher education institutions *(Hochschulen)* in the Federal Republic of Germany are public *(staatlich)* institutions. There are various types:

- *Universitäten* (universities), *Technische Universitäten* (technical universities), and several other higher education institutions specializing in subjects normally found at universities;
- *Pädagogische Hochschulen* (colleges of education);
- Kunsthochschulen (art academies) and *Musikhochschulen* (music academies);
- *Gesamthochschulen* (comprehensive universities);
- *Fachhochschulen.*

The *Fachhochschulen*, established in 1970, have the function of providing more practice-related courses with a scientific or artistic basis, particularly in the fields of Engineering *(Ingenieurwissenschaften)*, Economics *(Wirtschaft)*, Social Science *(Sozialwesen)*, Agricultural and Nutrition Sciences *(Agrar- und Ernährungswissenschaften)*, and Design *(Gestaltung)*. The *Fachhochschulen* also have duties in regard to application-related research and development, although, in this respect, their scope is limited for staffing and financial reasons. Even so, *Fachhochschule* graduates are supposed to be in a position to apply scientific knowledge *(wissenschaftliche Erkenntnisse)* and methods. The thorough (and problemizing) impartation of basic theory in subjects at *Fachhochschulen* takes second place to a broad approach to the technical subject matter, essential for professional practice. A detailed approach to theoretical content is only undertaken in those cases where it appears absolutely indispensable for efficient, practical implementation purposes, or provides basic understanding. On the other hand, the appreciation of practical relevance, application possibilities and problems are among the basic objectives. Discussion of concrete cases are of prime importance.

The *verwaltungsinterne Fachhochschulen*, specializing in Administration, Finance and Justice, enjoy a special position. They only provide courses for certain Civil Service careers in the relative branches of the administration and — depending on existing demand — only accept students who have already entered the Civil Service.

There is no qualitative difference between the state *Fachhochschulen* and the handful of non-state institutions in this sector since the latter are also subject to state control, particularly in regard to the level of courses and examinations.

The *Gesamthochschulen*, established in 1970, combine the commitments of research and teaching, normally provided by universities, colleges of education, *Fachhochschulen*, and, to some extent, by art academies. In part, they also offer courses found at universities or *Fachhochschulen*; above all, however, they provide integrated courses for which two *Diplom* degrees are obtainable. They contain features relating to both theory and application (practice), and are open to students with differing leaving certificates. The initial or basic segment *(Grundstudium)* is followed by an advanced segment *(Hauptstudium)* which is differentiated according to the various fields of specialization. After six to eight semesters, it culminates in a *Diplomprüfung* (Diplom degree examination), or, after studies lasting six semesters, opens up the way for further studies.

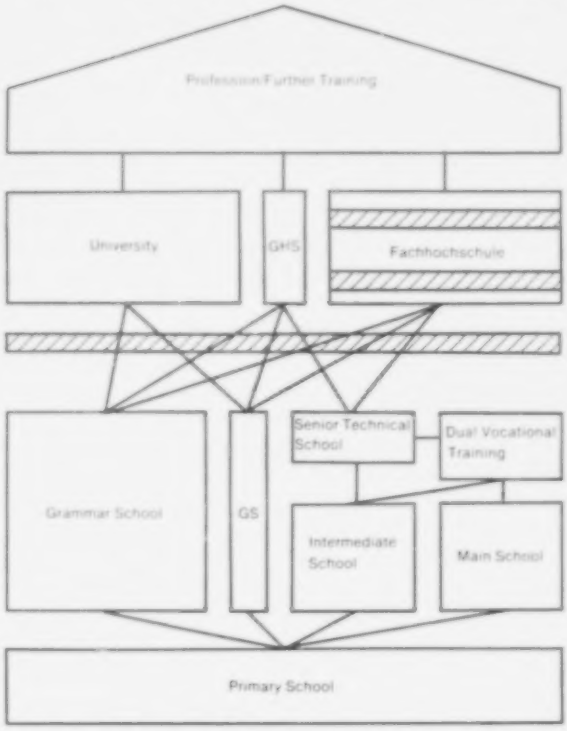
The following diagram shows the basic structures of the higher education system in the Federal Republic of Germany, including the usual means of entry from the school sector:

On the strength of new regulations in recent years, the legal status of *Fachhochschulen* (except for the *verwaltungsinterne*) now corresponds to that of universities. All *Fachhochschulen* are now public-law entities with the right to autonomy within their sphere of activity. The *Bundesländer* merely enjoy certain rights of decision and supervision. *Fachhochschulen* are organized into departments or subject areas *(Fachbereiche)*. They are headed by a president or rector who is elected for a specific period of office.

First and foremost, the administration is empowered to take its own decisions on programmes in regard to teaching, research and other activities relating to higher education institutions. This sector also includes decisions on resource planning, particularly the budget.

Other *Fachhochschule* responsibilities, stemming directly or indirectly from their functions as higher education institutions, are, in particular, the social assistance of students, co-operation with other higher education institutions and public information.

All the member groups in the collegial organs at *Fachhochschulen* — professors, students, academic staff and other personnel — all have a



GS = Comprehensive School
GHS = Comprehensive University
= optional or obligatory practicals or practical semesters

Practical training in the optical Laboratory at the Berlin Technical Fachhochschule.

seat and a vote. In the bodies concerned with teaching, research and the appointment of professors, the professors have been granted the majority of seats and votes. Following the amendment to the Framework Act for Higher Education in 1985, the professors also now enjoy the majority in the body electing the rector or president.

The participation of all members of higher education institutions in the autonomy of their institutions has become reality nowadays.

Demographic forecasts

The birthrate in the Federal Republic of Germany has been highly erratic over the last 25 years:

- from the early 1950s to the mid-1960s, the annual birthrate rose from 800,000 to almost 1.1 million;
- thereafter it suffered a sharp decline, reaching an all-time low of 577,000 in 1978;
- in 1979, at a figure of 582,000, the birthrate exceeded that of the previous year for the first time; in subsequent years the level stabilized at around 620,000.
- Correlated with a demographic forecast for the years ahead by the *Statistisches Bundesamt* (Federal Statistics Office), Wiesbaden, a slight increase in the birthrate is anticipated as women in the high birthrate year groups increasingly reach childbearing age. Thereafter a renewed drop must be reckoned on as the women in the low birthrate year groups reach childbearing age.

Basically, it must be assumed that any forecast becomes more uncertain, the farther it extends into the future and the more differentiated it is. Furthermore, developments can differ from *Bundesland* to *Bundesland*. Bearing this reservation in mind, the following developments in the various areas of higher education are based on the birthrate pattern mentioned initially:

The attitude of the political parties and the associations to Fachhochschulen

All the political parties in the German Bundestag have shown a positive attitude to the *Fachhochschulen*. They regard them as an indispensable part of a differentiated higher education system with their own function, according to which, as higher education institutions, they provide students with courses of relatively short duration which are, in large measure, practice-related.

Forecast of students and final examinations according to type of higher education institution

Year	Students			Passed higher education exams (persons)		
	Total	at		Total	at	
		Universities and art academies	Fachhoch-schulen		Universities and art academies	Fachhoch-schulen
Actual data[1]						
1986	1368	1055	312	147[3]	99	48
Forecast data[2]						
1986	1319—1427	1035—1110	284—317	169	113	56
1987	1310—1460	1040—1130	270—330	175	118	57
1988	1245—1490	990—1170	255—320	179—183	124	55—59
1989	1185—1465	940—1150	245—315	186—195	129—130	57—64
1990	1135—1428	900—1120	235—308	185—198	130—133	55—65
1991	1115—1395	891—1100	224—295	184—205	132—138	52—67
1992	1095—1359	883—1080	212—279	184—208	134—142	50—66
1993	1035—1323	835—1059	201—264	180—212	132—148	48—64
1994	950—1224	763— 979	187—245	174—214	125—150	49—64
1995	887—1142	725— 929	162—212	156—203	113—145	43—58
1996	845—1087	689— 882	156—205	150—194	111—142	40—52
1997	802—1031	650— 832	153—200	151—194	113—145	38—49
1998	758— 974	608— 777	150—197	152—177	116—130	36—47
1999	742— 952	592— 756	150—196	126—163	91—117	35—46
2000	733— 941	583— 744	150—196	120—155	86—110	34—45

1) Source: Statistisches Bundesamt
2) Source: KMK: Dokumentation Nr. 95
3) 1985
(Extract from "Grund- und Strukturdaten 1987/88")

Differences do exist, however, in regard to individual aspects.

Even as far back as the 30th party conference in 1981, the CDU stated in a resolution: "Particular importance is attached to the transfer of technology from higher education institutions to industry. Consequently, in the case of application-related research, the rapid conveyance of findings into industry must be assured." This is why the CDU supports improved advancement opportunities at *Fachhochschulen*. In its *Leitsätze sozialdemokratischer Hochschulpolitik von 1987* (Guiding Principles of Social Democratic Higher Education Policy 1987), the SPD advocate providing *Fachhochschulen* with greater "opportunities for applied research and development" in future. The F.D.P. has made an emphatic demand for *Fachhochschulen* to be given development commitments.

With regard to the introduction of practical-training semesters *(Praxissemester)* the CSU regards itself as a trailblazer and even calls such semesters integrated into study courses the "Bavarian Model". It would like to further intensify the practice-related approach at *Fachhochschulen*. The CDU is basing its views on the model of two practical semesters, recommended by the *Wissenschaftsrat* (Science Council): the SPD and the F.D.P., on the other hand, favour a higher education policy which includes practical semesters on a pragmatic basis.

The Greens (ecological party) "categorically reject the educational trend towards a derogation of *Fachhochschulen*". In the controversy on the recognition of final examinations at German *Fachhochschulen*, the Greens support the demands of *Fachhochschule* students for full recognition of their *Diplome* (degrees) throughout the EC, and the equating of *Fachhochschule* and university final examinations.

Not one of the parties in the German Bundestag has adopted an unequivocal position in regard to the question of reducing the teaching commitment of *Fachhochschule* professors, and the provision of scientific staff — although both these questions are of fundamental importance for the further development of *Fachhochschulen*.

The broad acceptance of *Fachhochschulen* by industry is clearly illustrated by a statement made by the *Kuratorium der Deutschen Wirtschaft*: "The *Fachhochschulen* should be given their own profile and further developed."

The *Zentralverband der Ingenieurvereine* (Central Engineers Association), which has supported *Fachhochschulen* since their inception, has called for four-year (instead of the present three-year) courses and a change in the career regulations to remove the differences in salary between university and *Fachhochschule* graduates on commencement of employment.

Courses of study at Fachhochschulen

On the basis of the agreement by the *Kultusministerkonferenz* (see above) of 14 November 1980 on the fields of specialization at *Fachhochschulen* (in the final draft of 9 November 1984), and making due allowance for the later demands of the labour market, the following *Fachbereiche/Fachrichtungen* (disciplines/special fields) have developed at *Fachhochschulen*:

- **Sprach- und Kulturwissenschaften (Sciences of Language and Culture):** *Bibliothekswesen* (library science), *Religionspädagogik* (religious pedagogy), *Sozialwesen* (social science), *Übersetzungswesen* (translating);

- **Wirtschafts-, Gesellschaftswissenschaft (Economics, Sociology):** *Betriebswirtschaft/Wirtschaft* (business administration/economics), *Europäische Betriebswirtschaft* (European business administration), Touristik (tourism), *Transportwesen* (transport), *Versicherungswesen* (insurance), *Wirtschaftsingenieurwesen* (industrial engineering);

- **Mathematik, Naturwissenschaften (Mathematics, Natural Sciences):** *Bauphysik* (constructional physics), *Biotechnologie* (biotechnology), *Chemie* (chemistry), *Informatik* (computer science), *Mathematik* (mathematics), *Metallkunde* (metallurgy), *Physik* (physics), *Systemanalyse* (system analysis), *Wirtschaftsinformatik* (industrial computer science);

- **Ingieurwissenschaften (Engineering Sciences):** *Anlagenbetriebstechnik* (industrial in-

stallations), *Architektur* (architecture), *Augenoptik* (opthalmology), *Automatisierungstechnik* (automation engineering), *Bauingenieurwesen* (civil engineering), *Bekleidungstechnik* (garment technology), *Bergbau* (mining), *Druckereitechnik* (printing and reproduction technology), *Elektronik* (electronics), *Elektrotechnik* (electrical engineering), *Fahrzeugtechnik* (automotive engineering), *Feinwerktechnik* (precision instruments engineering), *Fotoingenieurwesen* (photo engineering), *Glastechnik* (glass technology), *Hüttentechnik* (metallurgical engineering), *Innenarchitektur* (interior design), *Keramik* (ceramic technology), *Kerntechnik* (nuclear technology), *Kunststofftechnik* (plastics technology), *Landmaschinenbau* (agricultural mechanical engineering), *Luft- und Raumfahrttechnik* (aircraft and aerospatial technology), *Maschinenbau* (mechanical engineering), *Medientechnik* (media technology), *Papiertechnik* (paper technology), *Produktionstechnik* (manufacturing technology), *Schiffbau* (shipbuilding), *Schiffsmaschinenbau* (marine engineering), *Schiffbetriebstechnik* (ship's operational technology), *Seefahrt* (navigation and nautical sciences), *Städtebau* (town planning), *Technisches Gesundheitswesen* (health technology), *Textiltechnik* (textile technology), *Triebwerkbau* (transmission engineering), *Umweltschutz* (environmental conservation), *Verfahrenstechnik* (chemical engineering), *Vermessungs- und Kartenwesen* (geodesy and mapmaking), *Wasserbau* (hydraulic engineering), *Werkstofftechnik* (materials technology);

- **Agrar-, Forst- und Ernährungswissenschaft (Agricultural Science, Forestry and Nutrition):**
  Forstwirtschaft (forestry), *Gartenbau* (horticulture), *Getränketechnologie* (drinks technology), *Haushalts- und Ernährungstechnik* (domestic and nutrition technology), *Holzwirtschaft* (wood technology and management), *Landespflege* (soil conservation), *Landwirtschaft* (agriculture), *Lebensmitteltechnologie* (food technology), *Milch- und Molkereiwirtschaft* (dairy farming and milk products), *Weinbau* (viniculture);

- **Kunst, Kunstwissenschaften (Art, Fine Arts):**
  Fotographie (photography), *Gestaltung* (design), *Kunst* (art), *Ton- und Bildtechnik* (audio and visual engineering).

Possibilities of study at *Fachhochschulen* and in corresponding courses at *Gesamthochschulen* (comprehensive universities) are made known in *Studien- und Berufswahl*, published annually by the *Bund-Länder-Kommission für Bildungsplanung und Forschungsförderung* and the *Bundesanstalt für Arbeit* (Federal Labour Office).

Study at Fachhochschulen

Entrance requirements and admission situation

The entrance requirement for a course of study at *Fachhochschulen* is the *Fachhochschulreife* Certificate (meaning that candidates must have completed *Fachoberschule*) or the *Allgemeine Hochschulreife (Abitur)*, and they must also have undertaken practical training *(praktische Ausbildung or Praktikum)*.

Fachhochschulreife is obtained in most cases at *Fachoberschulen*. These are schools comprising two successive years, usually classes/grades 11 (including vocation-related practical training) and 12 — only class/grade 12 in certain *Bundesländer*. Students are accepted who have successfully completed *Realschule* or reached an equivalent level of education. In other words, 12 full-time school years are basically required to obtain *Fachhochschulreife*, and 13 to obtain *Allgemeine Hochschulreife*.

Candidates who have completed a course of trade training can enter the second year (class/grade 12) at *Fachoberschulen* — in fact, in the Rhineland-Palatinate and Schleswig-Holstein they exist in this form only. The *Fachhochschulen* are of particular importance for this group of candidates. In the whole of the federal area about 40 percent of all *Fachhochschule* students have had professional experience, in other words, have completed a course of vocational training.

Apart from general education, *Fachoberschulen* provide special courses in such vocation-related subjects as *Wirtschaft* (economics) and *Technik* (technology) etc. With the exception of Baden-Württemberg, there are *Fachoberschulen* in all the *Bundesländer*, some of which provide part-time teaching programmes. Apart from *Fachoberschulen*, further institutions and opportunities for the acquisition of *Fachhochschulreife* for persons already practising a profession exist in the *Bundesländer*. In almost all *Bundesländer*, pupils who have completed class/grade 12 at schools of general education (particularly *Gymnasium*) can acquire *Fachhochschulreife* in conjunction with practical training.

In recent years, an increasing number of *Abiturienten* (holders of the *Abitur* which entitles holders to study at university) have enrolled for a course of study at a *Fachhochschule* because they think that this educational path offers better professional prospects.

Foreigners seeking admission to a *Fachhochschule* in the Federal Republic of Germany also require a secondary school leaving certificate. Provided this certificate is equivalent to a corresponding German certificate, the applicant is granted entrance. The establishment of this equivalence is not the responsibility of *Fachhochschulen*, but by the designated authority in the Federal Republic. Information in this respect will be provided by the administration at the *Fachhochschule* concerned.

If an equivalence cannot be established, the foreign applicant is not admitted to a course of study. In such cases, the applicant must sit an examination known as *Feststellungsprüfung* which assesses the candidate's knowledge in regard to the proposed course of studies. As a general rule, this *Feststellungsprüfung* is taken after a preparatory period of two semesters. It can also be retaken. To this end, attendance at a subject-oriented *Propädeutikum* or *Studienkolleg* is recommended. The examination can also be taken straightaway, without the above-mentioned preparation. Before this is undertaken, however, candidates are urged to consult with the *Studienkolleg* concerned.

Studienkollegs (special courses) for foreign candidates have been set up in the Federal Republic of Germany at *Fachhochschulen* (see Appendix II). Preparatory courses are available in *Technik* (technology), *Wirtschaft* (economics), *Gestaltung* (design) and *Sozialwesen* (social science).

The *Feststellungsprüfung* includes the German language, mathematics and at least two other subjects, taken from the special course attended. Any candidate in possession of the German *Sprachdiplom — Stufe II —* issued by the *Kultusministerkonferenz* is exempted from an examination in German. Detailed information on the examination requirements is provided by the *Studentensekretariate* (student secretariats), the central advice offices at *Fachhochschulen* and the *Studienkollegs*.

There are admission restrictions at some of the *Fachhochschulen*, but only in certain disciplines. This applies, in particular, to popular disciplines such as *Technisches Gesundheitswesen* (health technology), *Forstwirtschaft* (forestry), *Gartenbau* (horticulture), *Landbau und Landespflege* (agriculture and soil preservation), and *Bibliothekswesen* (library science). By resorting to a supralocal allocation system, several *Bundesländer* do their best to ensure that all applicants are given a place in the desired discipline. As far as foreigners are concerned, there are special regulations in regard to admission restrictions.

The *"verwaltungsinterne Fachhochschulen"*, specializing in Administration, Finance and Administration of Justice, enjoy a special position. The number of applicants regularly exceeds (quite considerably) capacity. The acceptance of candidates is the responsibility of the administration.

The pattern of studies — practice-orientation

Courses of study have been so arranged that they can be completed in three to three-and-a-half years. To these courses must be added, if necessary, practical semesters outside the *Fachhochschule* which are closely related to the course of studies in question. The courses are divided up, in most cases, into a *Grundstudium* (initial or basic segment) lasting two, three, and in some cases, four semesters, and a *Hauptstudium* (advanced segment). *Vor- und Zwischenprüfungen* (preliminary and intermediate examinations) are prescribed after the *Grundstudium* in most of the *Bundesländer*. Study courses at *Fachhochschulen*, as a general rule, take place in the form of smaller study units, rather than major lectures. Exercise periods, seminars and practical sessions usually take place in small groups. Laboratory sessions in technical disciplines are frequent. In the individual disciplines, a difference is generally made between compulsory, obligatory-optional and optional subjects *(Pflichtfächer, Wahlpflichtfächer, Wahlfächer)*. This gives students the opportunity to decide for themselves on their special fields. It is laid down in each case how the individual subjects culminate (such as through as examination or *Leistungsnachweis*, i.e. certificate).

Evidence of the acquisition of practical experience must be forthcoming before any course of study has been completed. The regulations governing the relative practical periods for the various study courses vary from *Bundesland* to *Bundesland*.

There are practical periods which, as a general rule, take place during vacations and last several months. For some fields of study, such as *Sozialwesen* (social science), practical training takes place concomitantly to studies, and has to be completed alongside other teaching events.

In some of the *Bundesländer* there are *Praxissemester* (practical semesters). The latter are

periods of practical training — lasting 20 to 26 weeks — which are integrated with study courses at *Fachhochschulen*. During this time, students work in firms, administration etc. Currently, two practical-experience semesters are only compulsory in Bavaria and Baden-Württemberg. As a rule, the first practical semester must be completed before the third semester of studies at the *Fachhochschule*, and the second before the sixth studies semester. Following the publication of its *Entwicklungsperspektiven* der *Fachhochschulen in Hessen* (Development Perspectives for *Fachhochschulen* in Hesse), this *Bundesland* is planning to include at least one practical semester in all study courses by 1992. At present, both Hamburg and Hesse include a compulsory practical semester in individual courses, usually after the fourth semester of studies. At some of the *Fachhochschulen in* Northrhine-Westphalia and Berlin (West), practical semesters are included on an optional basis in the courses. In those courses where they are obligatory, studies (including the *Prüfungssemester*, or examination semester) take four years to complete.

Practical semesters are, in some cases, supplemented by practice-concomitant events. These take place regularly alongside practical activity and are intended to help guide and evaluate experience. During these *Praxissemester* the students remain enrolled at the *Fachhochschule*. The *Praktika* and the *Praxissemester* are supervised by the *Fachhochschulen*. The students have to write a report on what they have done. *Praxissemester* conclude either with an examination or an assessment by the *Fachhochschule*.

In general, the effects of *Praxissemester* are considered positive. The intensive practical experience and better information on professional reality obtained by the students exert an advantageous influence on study motivation. Conversely, *Praxissemester* also help promote further development of teaching which can adjust to the problems arising in practice. Obviously, employment prospects are greatly enhanced by the experience gained during *Praxissemester*. Consequently, this is one of the reasons for the efforts to include *Praxissemester* in courses where they are still not generally planned.

The examinations, which take place to some extent during the studies courses, are conducted by teaching staff at *Fachhochschulen*. The *Abschlußprüfung* (final exam), which is subject to differing regulations from *Bundesland* to *Bundesland*, usually comprises a major *Abschlußarbeit* (paper), *Klausurarbeiten* (written examinations) and a *mündliche Prüfung* (oral exam). The *Abschlußarbeit* in the technical disciplines is nearly always performed in conjunction with laboratory assignments or constructive problems. Wherever possible, current problems arising in practice have to be solved. Design calls for the completion of major *Entwürfe* (designs).

Graduation and diploma

Formerly, successful completion of studies at a *Fachhochschule* led to *Graduierung*. Graduates were awarded titles such as *Ingenieur (grad.)*, *Betriebswirt (grad.)*, *Designer (grad.)* or *Sozialpädagoge (grad.)*. As a result of the *Hochschulrahmengesetz* (Framework Act for Higher Education) of 1976 and its subsequent amendments, and the relative rulings by the *Bundesländer*, *Absolventen* (graduates) at *Fachhochschulen* in the Federal Republic of Germany have been awarded a *Diplom* degree designating the discipline they studied since the end of the 1970s. Following a further amendment to the *Hochschulrahmengesetz* in 1985, on the strength of the *Hochschulprüfung* (final examination) at *Fachhochschulen*, or in *Fachhochschule* courses at other higher education institutes, the *Diplomgrad* (Diplom degree), with the suffix "FH" *(Fachhochschule)* is now conferred, such as *Diplom-Ingenieur (FH)* or *Diplom-Betriebswirt (FH)*.

Further qualification and further training at *Fachhochschulen*

Some of the *Fachhochschulen* offer those who have completed their studies the opportunity to follow other courses — *Aufbau-, Zusatz- und Ergänzungsstudium* (further, additional or supplementary studies). These courses provide further academic or professional (even interdisciplinary) qualifications and usually last two to four semesters. They conclude with a *Leistungsnachweis* (certificate or report) or with a further academic title *(Grad)*, i.e. Diplom.

There were some 50 such courses at *Fachhochschulen* in 1986, including *Wirtschaftswissenschaften für Ingenieure* (economics for engineers), *Abfallwirtschaft für Bauingenieure* (refuse economy for civil engineers), and *Tropenwasserwirtschaft* (tropical water economy). Within the framework of *Postgraduiertenstudium* (post-graduate studies) in the interlinked system of European higher education institutions *(Hochschulverband)*, corresponding foreign higher education qualifications can be acquired.

Further or contact studies are designed, in particular, for those who already boast of professional experience and are open to both higher

education graduates with practical professional experience and candidates who have acquired the necessary qualification in their profession or elsewhere; in other words, a higher education degree or similar qualification is not an obligatory prerequisite for participation. These study courses are intended to update former higher education training, to provide further qualifications and to process experience gained in professional practice — which must be considered in regard to development and change in the professional world.

Statistics of studies at *Fachhochschulen*

(also see Appendix III)

a) There were 242 institutions of higher education in the Federal Republic of Germany in 1986, 122 of which were *Fachhochschulen*. The number of *Gesamthochschulen* (comprehensive universities) has dropped from eight to seven. *Fachhochschule* study courses are also possible for certain disciplines at these *Gesamthochschulen*.

(The distribution of these higher education institutions in the *Bundesländer*, and the growth in the number of *Hochschulen* from 1975 to 1985 is given in Statistic 1).

b) There were 1,367,699 students enrolled at German higher education institutions in 1986. 20.4 percent of this figure was accounted for by the 279,387 students at *Fachhochschulen*, and 2.4 percent by the *verwaltungsinterne Hochschulen* belonging to the Federal Government and the *Bundesländer*. Compared with the previous year, there has once more been a slight shift in favour of the *allgemeine Fachhochschulen*.

c) As far as *Studienanfänger* (first-year students) are concerned, the development in favour of *allgemeine Fachhochschulen* is even more pronounced than in the case of students in more advanced semesters. Only 69 percent of all *Studienanfänger* embarked on a course of studies at a university or an art academy; in this connection, the proportional drop in the number of women is almost twice that of the men. The *allgemeine Fachhochschulen* have experienced an increase of 0.4 percent in the case of women, and the *Verwaltungsfachhochschulen* 0.3. These two types of *Fachhochschulen* now boast of 19.2 and 5.5 percent (respectively) of the total student population.

d) Engineering courses enjoy outstanding importance at *Fachhochschulen;* almost half of all students (49.4 percent) at these institutions are reading engineering subjects; true, only 12.1 percent of them are women.

e) Of the 279,387 students at *Fachhochschulen* in 1986, 14,131 were foreigners, including 2,543 women. There were no foreign students at the *verwaltungsinterne Fachhochschulen*. Of the 54,972 *Studienanfänger* at *Fachhochschulen* in 1986, 2,241 of them were foreigners, including 561 women. There were no foreign *Studienanfänger* at *verwaltungsinterne Fachhochschulen*.

The numerical situation of foreign students, according to type of higher education institution and nationality, in the 1985/86 winter semester, is given in Statistic 5.

f) The number of successfully passed examinations at *Fachhochschulen* in 1984 was percentage-wise higher (31.5 percent) than the number of students in comparison with all higher education institutions (22.2 percent). Particularly worthy of note is the fact that twice the number of examinations in engineering are passed at *Fachhochschulen* than at universities and technical universities.

g) Although about one-quarter of all students study at *Fachhochschulen*, only one-tenth of the full-time teaching staff for the sciences and arts work at *Fachhochschulen*. This unfavorable ratio, as far as *Fachhochschulen* are concerned, can be explained by the lack of a "middle-range" personnel at *Fachhochschulen* in the majority of the *Bundesländer*. Compared with universities, the number of professors at *Fachhochschulen* roughly corresponds to the distribution of students. Even more glaring is the disadvantage enjoyed at *Fachhochschulen* in regard to administrative, technical and other staff.

h) Studies at *Fachhochschulen* last, on average, three years fewer than at universities (4.5 compared with 7.4 years); as a result, graduates of *Fachhochschulen* embark on their career at a younger age — although many of them complete a vocational training course before commencement of studies.

The locations of Fachhochschulen

See Appendix I

Source: Carl Duisberg Gesellschaft

Employment prospects for *Fachhochschule* graduates

Despite increased unemployment in past years, particularly for the professions requiring higher education qualifications, it should not be overlooked that the labour market for highly qualified professions in the Federal Republic of Germany has deteriorated less than it has for gainfully employable persons in general. Their labour-market risk is still lower than it is for the average employable person *(Erwerbsperson).*

In 1986, for the first time in seven years, the number of persons with higher education qualifications dropped slightly — despite a renewed increase in the number of higher education graduates. Late September 1986, 114,300 persons with higher education qualifications were out of work, i.e. 3,200 — or 3 percent — fewer than the year before.

Whereas the number of jobless males with higher education qualifications — at 57,600 in September 1986 — was 7 percent below that of the previous year, the number of unemployed females — at 56,700 — was 1 percent higher. This was partly influenced by the fact that the number of women in the favoured technical and scientific disciplines is very small. By the same token, women frequently qualify in arts subjects which are less in demand on the labour market.

Compared with other higher education institutions, *Fachhochschule* graduates are in a relatively favourable position — even if there are considerable differences between the disciplines. There are difficulties, in particular, in Social Science. In general, however, it can be assumed that *Fachhochschule* graduates — especially because of the practice-related nature of their studies — are better favoured in regard to employment prospects than university graduates.

In the functions they normally perform in the Federal Republic of Germany, a distinction must be made in the case of *Fachhochschule* graduates between public service, in other words a job with the state or local authorities, and the rest of the employment system.

A *Fachhochschulabschluß* (qualification) provides access to jobs in the *gehobener Dienst* (clerical grades) of the Civil Service *(öffentlicher Dienst);* a university degree opens up the way to the *höherer Dienst* (higher or senior grades). The commencing salaries for the former are below those of the latter. According to the Civil Service Career Regulations, however, *Fachhochschule* graduates can, at a later date, take a further examination which allows them to move up into the higher grades *(höherer Dienst).*

Outside the Civil Service, little difference is made between university and *Fachhochschule* graduates in most cases when they start out on their first job. At the present time, starting salaries for university graduates are somewhere between DM 2,800 and 3,700, and for *Fachhochschule* graduates between DM 2,500 and 3,200. This applies, for instance, to engineers working in the manufacturing sector.

Here, performance and experience are much more important for one's subsequent career than the type of higher education institution graduated from. As far as particular jobs are concerned, the way is just as much open to *Fachhochschule* graduates as it is for university graduates. Like their university counterparts, for instance, *Fachhochschule* architect graduates can, after two years professional practice, register at the Chamber of Architects, and officially style themselves "architect". More than half the persons engaged in the architectural profession in the Federal Republic of Germany have graduated from *Fachhochschulen.*

Even if *Fachhochschulen* do not educate people for the top positions, a broad spectrum of professional opportunities with far-reaching chances of promotion is open to them in industry and commerce.

Important individual aspects

Universities and *Fachhochschulen*

Universities and *Fachhochschulen* enjoy equal value as institutions within a differentiated higher education system. In the view of higher education political spokesmen, "equal value" does not mean that study courses and final examinations (qualification) are of equal value, but that the various higher education institutions are to be treated equally — as far as possible — in the general regulations governing all higher education institutions.

This resulted in a number of open questions in past years which were in urgent need of clarification. *The Westdeutsche Rektorenkonferenz (WRK)* in which the member higher education institutions constantly cooperate to fulfil their commitments in research, teaching and studies *(Forschung, Lehre und Studium)* through their rectors and presidents, and on whose presiding committee *(Präsidium)* a member from the *Fachhochschule* sector also has a seat, consequently devoted its attention to the most important questions and made known the following trend-setting resolutions as follows:

Doctor's degrees for Fachhochschule graduates

According to the currently valid legal situation, the right to confer doctorates *(Promotionsrecht)* is reserved for universities and technical universities. An extension of this right to include *Fachhochschulen* is not intended or sought by *Fachhochschulen* at the present time.

The WRK supports the wish of the *Fachhochschulen* to seek an acceptable solution for these institutions and their graduates, in collaboration with the universities. It is also in the interest of the universities and their faculties that correspondingly qualified *Fachhochschule* graduates be enabled to obtain a doctorate without unnecessary loss of time.

The WRK has recommended to the faculties — as already promised by some of them — to fully utilize all possibilities of recognizing and crediting study and examination achievements, and to make individual qualifications the prime criterion for rating purposes. Furthermore, special doctorate-related promotive measures could be considered. The final outcome should be such that the path to a university degree *(Diplom)* should be considerably shorter for capable candidates than it is at present.

Research and development

According to the Framework Act for Higher Education, institutions of higher education have the function of "fostering and developing science and the arts through research, teaching and study" in the way appropriate to the type of institution. This is defined for *Fachhochschulen* with almost the same wording in the Higher Education Laws of the *Bundesländer.*

Recent experience shows that — although still somewhat limited — there is a growing tendency at *Fachhochschulen* to undertake qualified research and development work which is being mainly funded by *Drittmittel* (funds from private sources, usually industry). At the same time, the limitations for research work at *Fachhochschulen* have become abundantly clear: the heavy teaching load of the professorial body and the restricted availability of personnel and non-cash resources.

In view of this situation, it will be primarily a matter of improving the opportunities for professors at *Fachhochschulen* to solicit and carry out research and development projects on the financial basis of *Drittmittel.*

The following WRK recommendation is particularly important in this connection: on the strength of agreements, research projects by *Fachhochschule* professors which are funded by *Drittmittel* are to be supported within the limits of existing possibilities by universities, technical universities and extramural research facilities who will make their infrastructure available.

New study courses

The current spectrum of subjects at *Fachhochschulen* is listed in an agreement by the *Kultusministerkonferenz* of the 14 Nobember 1980 (in the version of 9 November 1984) on *Fachrichtungen an Fachhochschulen.* This sets out 16 *Fachrichtungen* with various study courses, study areas and studies in depth *(Studiengänge, Studienrichtungen und Studienschwerpunkte).* This established and — in view of the professional opportunities it offers graduates — successful programme of courses at *Fachhochschulen,* has meantime been supplemented by new emphases and adapted to the requirements of the new fields of activity — but not extended to the subject areas reserved for the universities alone.

In the WRK's view, it is incumbent on the *Fachhochschulen* to fulfil their statutory obligation — as is the case for all types of higher education institutions — to adapt their study courses to scientific developments and professional fields of activity — and, if needs be, supplement them.

In this connection, the improvement of the range of study courses at *Fachhochschulen* also implies the inclusion of foreign-language elements and, where the need arises, *landeskundliche Angebote* (background studies on countries) in the studies programme. The WRK, however, is of the opinion that there is no perceptible requirement for a basically new range

of courses at *Fachhochschulen* in the *Philologien* (language and literature courses) and other arts and social science subjects — still the domain of the universities.

After clarifying these important factual and structural issues in the relationship between universities and *Fachhochschulen,* the organs of the West German Rectors Conference concerned themselves intensively with the internal organizational structure of the WRK and its relationship to existing conferences of the different types of higher education institutions, particularly the *Fachhochschulrektorenkonferenz.* Following a corresponding resolution on 29 June 1987 — which the *Fachhochschulrektorenkonferenz* "took approving note of" in the same year — they underscored their wish to work together under the WRK's roof and to speak with one voice through the WRK on matters of common interest.

Research, development and technology-transfer

For some little time now, the transfer of technology and knowledge from higher education institutions to industry has enjoyed high and growing priority in the Federal Republic of Germany. Cooperation between higher education institutions and industry is regarded as an important instrument of economic and regional policy. Higher education institutions make a substantial contribution to the regional promotion of trade and industry. In this context, the practice-oriented nature of their courses, and the applicability of their research work endow *Fachhochschulen* with particular importance.

In some subject areas there is traditional collaboration between higher education institutions and trade and industry. In the last few years promising points of departure have been developed in this regard. In its higher education objectives, set out in September 1985, the Federal Government considers it essential to extend this cooperation between higher education and industry, and to intensify the transfer of knowledge and technology as a service performed by higher education institutions, especially by *Fachhochschulen.* This is to be realized by:

- increased transfer of information, advice, help in the setting up of firms and further education/training (opening up higher education to trade and industry) on the part of higher education institutions;
- greater use by industry of research potential at higher education institutions, particularly by medium-size and small enterprises;
- the promotion of new firms oriented towards new technologies;
- intensifying the exchange of personnel between higher education and industry, and the removal of legal barriers;
- increased involvement of practicians working outside higher education institutions in activities on a part-time basis within these institutions.

As the Federal Government states in its *Drittmittelbericht,* efforts to promote technology transfer have been supported by the Federal Minister of Education and Science, the Federal Minister of Research and Technology, the Federal Minister of Economic Affairs, and the Science and Economics Ministers of the *Bundesländer.* In this way, a number of transfer offices have been set up in higher education institutions, technology consultation and liaison facilities created — and similar agencies on the part of Chambers of Industry and Commerce.

Teaching staff at *Fachhochschulen*

The independent function of *Fachhochschulen* is reflected in the staffing structure.

Hochschullehrer (teachers at higher education institutions) at *Fachhochschulen* in the Federal Republic of Germany are allowed to use the official title of "professor" according to higher education legislation.

Today candidates for a professorship must fulfil the following minimum requirements:

- a degree in a suitable subject from a higher education institution;
- teaching ability;
- special qualifications for performing investigation of a scientific nature, as normally evidenced by the quality of a doctorate, or specific qualification for creative arts work;
- furthermore — depending on the requirements of the position in question — particular achievements with regard to the application and development of scientific findings and methods in at least five years of professional activity, of which a minimum of three years shall have been spent outside higher education — which is the normal requirement for appointment — or proof of additional academic achievements in the form of *Habilitation* or equivalent academic achievements, including activity outside higher education, or additional creative arts achievements.

The compulsory teaching commitment for professors at *Fachhochschulen* is basically 18 hours a week during semester-time, although this load can be reduced in the light of other specific duties within the *Fachhochschule.* These include research and development work. Professors at *Fachhochschulen* can — at reasonable intervals (every four years on a regular basis) — be officially relieved of their duties within the higher education institution for a period of five to six months to further train through work in professional practice. In certain *Bundesländer* leave of absence is also granted for specific research projects.

Apart from the professors, part-time staff *(Lehrbeauftragte)* from industry, commerce and the administration also fulfil teaching assignments at *Fachhochschulen.* This is designed to promote the practical nature of study courses at *Fachhochschulen.* The number of weekly periods taught during semester-time by *Lehrbeauftragte* is currently greater than at universities. It amounts to about 10 percent of the total teaching provided: in some disciplines it is very much higher.

So far *Hochschulassistenten* (academic assistants) and *Wissenschaftliche Mitarbeiter* (Civil Servants or employees rendering service of a scientific nature at higher education institutions) are to be found at *Fachhochschulen* in only a few of the Bundesländer.

Students at *Fachhochschulen*

More than 14,000 graduates of *Fachhochschulen* and the institutions which preceded them were questioned in a survey funded by the Federal Ministry of Education and Science. The main findings of this study can be summarized as follows:

- Within the tertiary education field, *Fachhochschulen* still fulfil a special function as places of training for social climbers.
- The courses offered by *Fachhochschulen* have become increasingly attractive for *Abiturienten* (holders of the *Abitur* or Higher School Certificate and university admission qualification) over the last 15 years.
- Despite the continually growing proportion of *Abiturienten,* the professional-practical competence of *Fachhochschule* students must be rated surprisingly high.
- As a general rule, *Fachhochschule* graduates have comparatively minor problems on the labour market.

The importance of German *Fachhochschulen* for the training and education of foreign students has been described as considerable by education experts, because they offer "particularly well-qualifying study courses" vis-à-vis the many tasks to be performed in developing countries.

It was against this background that the Federal Ministry of Education and Science commissioned a study entitled *Vergleichende Untersuchung über Qualifizierungsprozesse und Studienerfolg ausländischer Studenten an Fachhochschulen* (Comparative Study of Qualifying Processes and Studies Success of Foreign Students at *Fachhochschulen).* In order to overcome the difficulties which arise, the study recommends a studies model for *Fachhochschulen,* in which:

- the candidate's suitability is established according to higher education and training requirements, and admission requirements ascertained by means of an entrance test,
- studies candidates with an inadequate knowledge of German acquire the necessary linguistic skill by intensive instruction,
- the *Studienkollegs* (preparatory courses) are more higher-education oriented, and presume integration or at least close cooperation with higher education institutions,
- the *Feststellungsprüfung* (assessment examination) can be taken step by step and concomitant with studies through *Leistungsnachweise* (see above) in the form of *Scheine* (certificates), and
- the studies courses at *Fachhochschulen* themselves take development-country aspects into greater consideration, work with small groups and tutors is possible, and foreign students are involved to an even greater extent in practical vocational training and vocational-field measures.

Transfer from *Fachhochschule* to university

According to the regulations in the *Bundesländer,* the successful completion — and in some cases the *Zwischenprüfung* (intermediate examination) — of a course of study at *Fachhochschulen* provides graduates with the *Allgemeine Hochschulreife* certificate which enables them to study at a university or technical university. In addition, in some of the *Bundesländer,* a *fachgebundene Hochschulreife* certificate may be obtained on successfully passing the *Zwischenprüfung* on comple-

tion of the *Grundstudium* (initial or basic segment of a studies course) at a *Fachhochschule*. The *fachgebundene Hochschulreife* permits further studies in related disciplines only — in two *Bundesländer* the *Allgemeine Hochschulreife* likewise. The Framework Act for Higher Education (HRG), however, has considerably reduced the possibility of further study at a university in courses subject to restricted admission *(Numerus clausus)*. Accordingly, *Zeitstudenten*, including *Fachhochschule* graduates, are awarded a small percentage of the study places only. This is only of practical portent in such disciplines as medicine, dentistry and veterinary medicine.

As a result of these regulations, the number of transfers from *Fachhochschulen* to universities and *Pädagogische Hochschulen* (colleges of education) rocketed in the first instance (after 1971). At times, up to 30 percent of *Fachhochschule* students were availing themselves of the opportunity of transfer. Be that as it may, apart from a few exceptions, there has been a continuous decline in numbers. The proportion of *Fachhochschule* graduates wishing to embark on a course of further study at a university is probably in the region of 10 percent nowadays. This could well be the result of the difficult labour-market situation, particularly for graduates of universities and *Pädagogische Hochschulen* (above all for teachers). In technical disciplines, in particular, the time and energy invested in further or continued studies at university are frequently not in correct proportion to the position which can be acquired on the strength of the further qualification.

In the case of further study at a university, *Fachhochschule* graduates' study achievements are taken into account. Here the decision is taken by the university in question, usually in individual cases. Since *Fachhochschule* graduates can only embark on existing courses of study at university, it means they must spend a long time at university before taking their final examinations.

Recognition of *Diplom* degrees abroad

The final qualification obtained at a German *Fachhochschule* can be assessed abroad according to the education system of the country concerned.

In recent years, there has been a growing number of countries which recognize the *Diplom* degree awarded at German *Fachhochschulen* either for certain subject areas or generally.

- On 10 June 1985, the Council of the European Community approved a guideline concerned with the reciprocal recognition of *Diplom* degrees, examination results and other proof of qualifications in architecture. The purview of this guideline also includes the final qualifications of architects at German *Fachhochschulen*. The following extract from this guideline refers specifically to *Fachhochschule* graduates:

Article 4

(1) Training according to Article 2 must conform both with the requirements of Article 3 and the prerequisites listed below:

a) Total length of training must cover a minimum of four years of study on a full-time basis at a higher education institution or similar education institution or a minimum of six years of study, three years of which must be full-time at a higher education institution or similar institution.
b) training will be completed by the passing of an examination of higher educational level.

Contrary to Subsection 1, on publication of this guideline, the three-year training at *Fachhochschulen* in the Federal Republic of Germany is recognized as meeting the requirements of Article 2 which conforms with the requirements of Article 3 and provides access to the activities named in Article 1 with the professional designation of "Architect", provided this is supplemented by four years of professional experience; this professional experience must be confirmed by a certification which shall be issued by the Chamber of Architects in whose list of architects, the architect, who would like to avail himself of this guideline, is entered. The Chamber of Architects must verify beforehand that the assignments carried out by the architect concerned in the field of architecture represent a convincing application of the knowledge mentioned in Article 3. This certification shall be issued according to the same procedure as applies for entry in the list of architects.

A comparable guideline within the area of the European Community is currently being elaborated for engineering. Simultaneously, a guideline for the *general* recognition of *Diplom* degrees awarded by higher education institutions is in preparation.

The Federal Government has repeatedly stated that it will only give its assent to guideline drafts of this nature if the *Diplom* degrees awarded by *Fachhochschulen* are included. The Federal Government is assuming that recognition of three-year *Fachhochschule* courses by other EC countries where studies last longer, will demand the fulfilment of certain "compensating requirements".

- German *Fachhochschule* diplom degrees are also recognized in the following countries:

— Bolivia, Costa Rica, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Paraguay;
— Iran, Yemen, Kuwait, Lebanon, Malta, Morocco, Tunisia, Turkey;
— Ethiopia, Ivory Coast, Ghana, Cameroon, Kenya, Congo, Mali, Senegal, Tanzania, Uganda, Central African Republic;
— Afghanistan, Burma, Indonesia, Singapore, Thailand.

Relations between *Fachhochschulen* and other countries.

Following a study funded by the Federal Ministry of Education and Science by the *Fachhochschule für Wirtschaft*, Pforzheim, the state *Fachhochschulen* had 344 contacts with foreign higher education institutions in 37 different countries in the autumn of 1986. A good 40 percent of these foreign relations were officially fixed by agreement. Two-thirds of the *Fachhochschulen* had at least one collaborative agreement with a foreign higher education institution. Most of these foreign relations were with British and French higher education institutions; these are followed at some distance by the United States, Poland and the People's Republic of China.

Almost all disciplines are involved in these foreign relations. Two-thirds of the substance of the individual contacts is confined to the professorial level: one-third is devoted to relations at a more or less student level.

These foreign relations are rated as important or very important by almost all state *Fachhochschulen*. The individual levels of cooperation achieved, however, vary somewhat; numerous cooperative relations are of minor intensity, and, according to the assessment of the study's findings, relations in the case of every fourth link could well undergo decisive improvement.

The handling of foreign relations and the coordination of the activities of the *Fachhochschulen* concerned are seldom the responsibility of the *Akademisches Auslandsamt;* as a rule there is no infrastructure to fulfil these commitments — likewise formulated by the legislators. Cooperative links and other activities are almost all borne individually by the professors.

The *Fachhochschulen* have stated that an increase in non-cash resources and personnel must be forthcoming to intensify and optimalize their foreign relations. In this connection, the setting-up of *Akademische Auslandsämter* is of great importance. What university teaching staff need, however, is a greater measure of personal academic freedom to intensify research and teaching in cooperation with foreign higher education institutions. In the final analysis, the manifold challenges in international collaboration call for an enhanced image on the part of *Fachhochschulen* and its acceptance in the eyes of persons making educational decisions and education and cultural affairs authorities in the Federal Republic of Germany. Moreover: since June 1987, *Fachhochschulen* can participate in the German Academic Exchange Service (DAAD) *(Deutscher Akademischer Austauschdienst).*

Further development of Fachhochschulen

At the autumn plenary assembly of the *Fachhochschule* Rectors Conference in Giessen in 1987, the Federal Minister of Education and Science stated that the *Fachhochschulen* represented that part of the German education system "which had developed the most strongly in recent years — quantitively and qualitatively". In his opinion, the *Fachhochschulen* have still not reached the upper limit of their quantitative share of the higher education field as a whole. According to basic data by the Science Council *(Wissenschaftsrat)* on the situation of higher education institutions, the inflow of first-year students *(Studienanfänger)* varies greatly from one higher education institute to the other — probably because of their differing profiles.

According to a resolution by the West German Rectors Conference *(Westdeutscher Rektorenkonferenz)* on the relationship between universities and *Fachhochschulen* in February 1987, the existing potential in the *Fachhochschulen* in respect of application-oriented research and development should be exploited to the full within the framework of their valid statutory commitments. In the last few years, *Fachhochschulen* have been undertaking research and development work — albeit rather limited, but nevertheless growing. Assisted by the amendment to the

A student of surveying completing a practical assigment at the Berlin Technical Fachhochschule.

Framework Act for Higher Education of 1985, they now have the opportunity to take the initiative in new research projects, particularly those funded by *Drittmittel* (see above) and through cooperation with universities, technical universities and extramural research facilities. This is also in the interest of the students at *Fachhochschulen.* Through their participation in research projects of this type, they can be induced to undertake independent scientific activity. Likewise in the extension of their range of disciplines, *Fachhochschulen* will have to remain flexible in regard to future developments, since, like all other types of higher education institutions in the Federal Republic of Germany, they have the statutory duty to "adapt their study courses to developments in the arts and science and professional fields of activity, and, if needs be, supplement them". The high level of acceptance of *Fachhochschule* graduates by trade and industry shows that the German *Fachhochschulen* have succeeded exceptionally well in adapting themselves to the requirements of the employment system. This, of course, presumes that the provision of *Fachhochschulen,* both in the personnel and material sectors (laboratories, machines etc) matches their present and future commitments. In this connection, the question of the salaries of *Fachhochschule* professors has been broached by the *Fachhochschulen* themselves. In their view, the recruitment of new qualified teaching staff is being considerably hampered by the currently valid pay scales. On 10 December 1986, the German Bundestag urged the Federal Government to start negotiations with the *Bundesländer* to reach agreement on a medium-term increase in the number of C3 posts in the staffing schedule at *Fachhochschulen.* This Bundestag resolution originated from a unanimous recommendation by the Bundestag Committee for Education and Science. It has also been realized in the *Bundesländer* that the current situation regarding professorial posts at *Fachhochschulen* is unsatisfactory. This also applies to the lack of scientific "middle-range" staff in many of the *Bundesländer* which, in view of the larger number of students, and increasing research and transfer duties, is growing more and more in importance.

Foreign relations are confronting *Fachhochschulen* with new commitments, They are growing continuously and have assumed a new dimension now that *Fachhochschulen* have the opportunity of being included in the German Academic Exchange Service. A commensurate equipping of *Fachhochschulen* for these commitments may help to ensure that they are given the same opportunities of action in regard to other countries as the universities already enjoy.

Appendix I

List of state-recognized Fachhochschulen

(without Verwaltungsfachschulen belonging to the Federal Government and the Bundesländer)

Fachhochschule Aachen
Kurbrunnenstr. 22
D-5100 Aachen
Tel.: (0241) 66075

Fachhochschule Aalen
Beethovenstr. 1
D-7080 Aalen 1
Tel.: (07361) 5760

Fachhochschule Augsburg
Baumgartnerstr. 16
D-8900 Augsburg
Tel.: (0821) 55861

Evangelische Fachhochschule Berlin
Reinertzstr. 40—41
D-1000 Berlin 33
Tel.: (030) 829908

Fachhochschule für Sozialarbeit
und Sozialpädagogik Berlin
Karl-Schrader-Str. 6
D-1000 Berlin 30
Tel.: (030) 21051

Technische Fachhochschule Berlin
Luxemburger Str. 10
D-1000 Berlin 65
Tel.: (030) 45041

Fachhochschule für Wirtschaft Berlin
Badensche Str. 50—51
D-1000 Berlin 62
Tel.: (030) 7831

Fachhochschule Biberach a. d. Riss
Karlstr. 9—11
D-7950 Biberach 1
Tel.: (07351) 7991

Fachhochschule Bielefeld
Kurt-Schumacher-Str. 6
D-4800 Bielefeld 1
Tel.: (0521) 1061

Fachhochschule Bochum
Universitätsstr. 150
D-4630 Bochum 1
Tel.: (0234) 7001

Fachhochschule Bergbau Bochum
Herner Str. 45
D-4630 Bochum
Tel.: (0234) 6251

Evangelische Fachhochschule
Rheinland-Westfalen-Lippe Bochum
Immanuel-Kant-Str. 18—20
D-4630 Bochum 1
Tel.: (0234) 369010

Fachhochschule Braunschweig-Wolfenbüttel
Salzdahlumerstr. 46—48
D-3340 Wolfenbüttel
Tel.: (05331) 3010

Hochschule für gestaltende Kunst
und Musik Bremen
Am Wandrahm 23
D-2800 Bremen 1
Tel.: (0421) 170051

Hochschule Bremen
Langemarckstr. 116
D-2800 Bremen 1
Tel.: (0421) 59051

Hochschule Bremerhaven
Columbusstr. 2
D-2850 Bremerhaven
Tel.: (0471) 48230

Fachhochschule Coburg
Friedrich-Streib-Str. 2
D-8630 Coburg
Tel.: (09561) 3541

Fachhochschule Darmstadt
Schöfferstr. 3
D-6100 Darmstadt
Tel.: (06151) 125162

Evangelische Fachhochschule Darmstadt
Zweifalltorweg 12
D-6100 Darmstadt
Tel.: (06151) 82196

Fachhochschule Dortmund
Sonnenstr. 96
D-4600 Dortmund 1
Tel.: (0231) 13910

Fachhochschule Düsseldorf
Universitätsstraße
Gebäude 23.31—32
D-4000 Düsseldorf 1
Tel.: (0211) 3111

Fachhochschule Ostfriesland in Emden
Constantiaplatz 4
D-2970 Emden
Tel.: (04921) 8070

Fachhochschule für Sozialwesen Esslingen
Flandernstr. 101
D-7300 Esslingen
Tel.: (0711) 394321

Fachhochschule für Technik Esslingen
Kanalstr. 33
D-7300 Esslingen
Tel.: (0711) 35111

Fachhochschule Flensburg
Kanzleistr. 91—93
D-2390 Flensburg
Tel.: (0461) 8051

Fachhochschule Frankfurt a. M.
Nibelungenplatz 1
D-6000 Frankfurt a. M. 1
Tel.: (069) 15331

Fachhochschule für Sozialwesen,
Religionswesen und Gemeindediakonie
Freiburg im Breisgau
Bugginger Str. 38
D-7800 Freiburg i. Breisgau
Tel.: (0761) 42241

Katholische Fachhochschule für Sozialwesen
und Religionspädagogik Freiburg im Breisgau
Wölflinstr. 4
D-7800 Freiburg i. Breisgau
Tel.: (0761) 200485

Fachhochschule Fulda
Marquardstr. 35
D-6400 Fulda
Tel.: (0661) 601081

Fachhochschule Furtwangen
Gerwigstr. 11
D-7743 Furtwangen
Tel.: (07723) 205155

Fachhochschule Gießen-Friedberg
Wiesenstr. 14
D-6300 Gießen 1
Tel.: (0641) 3091

Fachhochschule Hamburg
Winterhuder Weg 29
D-2000 Hamburg 76
Tel.: (040) 291881

Evangelische Fachhochschule für
Sozialpädagogik der Diakonenanstalt
des Rauhen Hauses Hamburg
Beim Rauhen Haus 21
D-2000 Hamburg 74
Tel.: (040) 65591180

Fachhochschule Hannover
Ricklinger Stadtweg 120
D-3000 Hannover 91
Tel.: (0511) 44420102

Evangelische Fachhochschule Hannover
Blumhardtstr. 2
D-3000 Hannover 69
Tel.: (0511) 555074—78

Fachhochschule der Stiftung
Rehabilitation Heidelberg
Bonhoefferstraße
D-6900 Heidelberg
Tel.: (06221) 882567

Fachhochschule Heilbronn
Max-Planck-Str. 39
D-7100 Heilbronn
Tel.: (07131) 5040

Fachhochschule Hildesheim-Holzminden
Hohnsen 3
D-3200 Hildesheim
Tel.: (05121) 8810

Märkische Fachhochschule
Frauenstuhlweg 31
D-5860 Iserlohn
Tel.: (02371) 5660

Fachhochschule Karlsruhe
Moltkestr. 4
D-7500 Karlsruhe 1
Tel.: (0721) 1690

Fachhochschule Kempten
Immenstädter Str. 69
D-8960 Kempten / Allgäu
Tel.: (0831) 23071—73

Fachhochschule Kiel
Breiter Weg 10
D-2300 Kiel
Tel.: (0431) 561044—45

Fachhochschule Köln
Reitweg 1
D-5000 Köln 21
Tel.: (0221) 82751

Katholische Fachhochschule Nordrhein-Westfalen
Wörthstr. 10
D-5000 Köln 1
Tel.: (0221) 733031

Fachhochschule Konstanz
Brauneggerstr. 55
D-7750 Konstanz
Tel.: (07531) 21031

Fachhochschule Niederrhein in Krefeld
Reinarzstr. 49
D-5150 Krefeld 1
Tel.: (02151) 8221

Fachhochschule Landshut
Am Lurzenhof 4
D-8300 Landshut
Tel.: (0871) 51311

Fachhochschule Lippe
in Lemgo
Liebigstr. 87
D-4920 Lemgo 1
Tel.: (05261) 7021

Evangelische Fachhochschule
für Sozialwesen Ludwigshafen
Maxstr. 29
D-6700 Ludwigshafen
Tel.: (0621) 518008

Fachhochschule Lübeck
Stephensonstr. 3
D-2400 Lübeck 1
Tel.: (0451) 5005001

Fachhochschule Nordostniedersachsen
in Lüneburg
Munstermannskamp 1
D-2120 Lüneburg
Tel.: (04131) 7060

Fachhochschule des Landes Rheinland-Pfalz
Seppel-Glückert-Passage 10
D-6500 Mainz
Tel.: (06131) 234614—15

Katholische Fachhochschule für Sozialarbeit,
sozialpädagogische und praktische Theologie
Mainz
Saarstr. 2
D-6500 Mainz
Tel.: (06131) 37031

Fachhochschule für Sozialwesen Mannheim
Pettenkoferstr. 24—30
D-6800 Mannheim 1
Tel.: (0621) 333034—36

Fachhochschule für Technik Mannheim
Speyerer Str. 4
D-6800 Mannheim 1
Tel.: (0621) 2926373

Fachhochschule München
Lothstr. 34
D-8000 München 2
Tel.: (089) 120071

Katholische Stiftungsfachhochschule München
Preysingstr. 83
D-8000 München 80
Tel.: (089) 41561

Fachhochschule Münster
Hüfferstr. 27
D-4400 Münster/Westfalen
Tel.: (0251) 831

Katholische Fachhochschule Norddeutschland
Driverstr. 23
D-2848 Vechta
Tel.: (04441) 3208

Evangelische Stiftungsfachhochschule
Nürnberg
Burgschmiedstr. 10
D-8500 Nürnberg 90
Tel.: (0911) 331019

Georg-Simon-Ohm-Fachhochschule Nürnberg
Keßlerplatz 12
D-8500 Nürnberg 21
Tel.: (0911) 58801

Fachhochschule Nürtingen
Neckarsteige 6—10
D-7440 Nürtingen
Tel.: (07022) 701347

European Business School
Schloß Reichartshausen
D-6227 Oestrich-Winkel
Tel.: (06723) 5065

Fachhochschule für Technik Offenburg
Badstr. 24
D-7600 Offenburg
Tel.: (0781) 2050

Fachhochschule Oldenburg
Ofener Str. 16
D-2900 Oldenburg i. O.
Tel.: (0441) 71086

Fachhochschule Osnabrück
Albrechtstr. 30
D-4500 Osnabrück
Tel.: (0541) 6081

Fachhochschule für Gestaltung Pforzheim
Holzgartenstr. 36
D-7530 Pforzheim
Tel.: (07231) 63258

Fachhochschule für Wirtschaft Pforzheim
Tiefenbronnerstr. 65
D-7530 Pforzheim
Tel.: (07231) 64041

Fachhochschule
Ravensburg-Weingarten
Postfach 1107
D-7987 Weingarten-Töbele 1
Tel.: (0751) 5011

Fachhochschule Regensburg
Prüfeningerstr. 58
D-8400 Regensburg
Tel.: (0941) 23091

Hochschule für Berufstätige
Staatlich anerkannte Fachhochschule
der AKAD
Adolf-Steckel-Str. 17
D-2370 Rendsburg
Tel.: (04331) 29482

Evangelische Fachhochschule
für Sozialwesen Reutlingen
Ringelbachstr. 221
D-7410 Reutlingen
Tel.: (07121) 29108

Fachhochschule für Technik
und Wirtschaft Reutlingen
Pestalozzistr. 73
D-7410 Reutlingen
Tel.: (07121) 2711

Fachhochschule Rosenheim
Marienberger Str. 26
D-8200 Rosenheim
Tel.: (08031) 8051

Fachhochschule des Saarlandes
Saaruferstr. 66
D-6600 Saarbrücken 1
Tel.: (0681) 54084

Katholische Fachhochschule für Sozialwesen,
-arbeit und -pädagogik Saarbrücken
Rastpfuhl 12a
D-6600 Saarbrücken
Tel.: (0681) 72031

Fachhochschule für Gestaltung Schwäbisch-
Gmünd
Rektor-Klaus-Str. 100
D-7070 Schwäbisch-Gmünd
Tel.: (07171) 602500

Fachhochschule für Technik
Sigmaringen
Anton-Günther-Str. 41
D-7480 Sigmaringen
Tel.: (07571) 4076—77

Fachhochschule für Bibliothekswesen
Stuttgart
Feuerbacher Weide 38—42
D-7000 Stuttgart 1
Tel.: (0711) 221083—84

Fachhochschule für Druck Stuttgart
Nobelstr. 10
D-7000 Stuttgart 80
Tel.: (0711) 6852807

Fachhochschule für Technik Stuttgart
Willi-Bleicher-Str. 29
D-7000 Stuttgart 1
Tel.: (0711) 1211

Fachhochschule Ulm
Prittwitzstr. 10
D-7900 Ulm
Tel.: (0731) 20530

Fachhochschule Wedel
PTL Wedel, Prof. Dr. Harms
Feldstr. 143
D-2000 Wedel
Tel.: (04103) 82008

Fachhochschule Weihenstephan
D-8050 Freising 12
(Weihenstephan)
Tel.: (08161) 711

Fachhochschule Fresenius Wiesbaden
Dammbachtal 20
D-6200 Wiesbaden
Tel.: (06121) 522054

Fachhochschule Wiesbaden
Kurt-Schumacher-Ring 18
D-6200 Wiesbaden
Tel.: (06121) 4940

Fachhochschule Wilhelmshaven
Friedrich-Paffrath-Str. 101
D-2940 Wilhelmshaven
Tel.: (04421) 8041

Fachhochschule Würzburg-Schweinfurt
Sanderring 8
D-8700 Würzburg
Tel.: (0931) 3040

Universität-Gesamthochschule-Duisburg
Lotharstr. 65
D-4100 Duisburg
Tel.: (0203) 3790

Universität-Gesamthochschule-Essen
Universitätsstr. 2
D-4300 Essen 1
Tel.: (0201) 1831

Fernuniversität-Gesamthochschule Hagen
Feithstr. 152
D-5800 Hagen 1
Tel.: (02331) 8041

Gesamthochschule Kassel Universität
Mönchebergstr. 19
D-3500 Kassel 1
Tel.: (0561) 8040

Universität-Gesamthochschule-Paderborn
Warburgerstr. 100
D-4790 Paderborn
Tel.: (05251) 601

Universität-Gesamthochschule-Siegen
Hölderlinstr. 3
D-5900 Siegen
Tel.: (0271) 7401

Bergische Universität-Gesamthochschule
Wuppertal
Gaußstr. 20
D-5600 Wuppertal 1
Tel.: (0202) 4391

Appendix II

Locations of Studienkollegs

Ausländer-Studienkolleg
der Fachhochschule Konstanz
Brauneggerstr. 55
D-7750 Konstanz

Studienkolleg bei den Fachhochschulen
in Bayern
Friedrich-Streib-Str. 2
D-8630 Coburg

Technische Fachhochschule Berlin
— Immatrikulationsamt —
Limburger Str. 20
D-1000 Berlin 65

Universität Bremen
— Auslandsangelegenheiten —
Bibliotheksstr.
D-2800 Bremen

Studienkolleg
für ausländische Studierende
Wiesenstr. 4
D-6300 Gießen

Institut für ausländische
Fachhochschulbewerber
des Landes Niedersachsen
Herrnhäuserstr. 8
D-3000 Hannover 1

Studienkolleg
für ausländische Fachhochschulbewerber
Sonnenstr. 98
D-4600 Dortmund

Studienkolleg
für ausländische Fachhochschulbewerber
Haldener Str. 182
D-5800 Hagen 1

Studienkolleg
für ausländische Fachhochschulbewerber
Reinarzstr. 49
D-4150 Krefeld

Staatliches Studienkolleg
für ausländische Fachhochschulbewerber
Morlautererstr. 31
D-6750 Kaiserslautern

Ausländerstudienkolleg
zur Fachhochschule des Saarlandes
Mecklenburgring 1
D-6600 Saarbrücken

Studienkolleg
an der Theodor-Litt-Schule
Parkstr. 12—18,
Steinmetzstr. 17—21
D-2350 Neumünster
(for studies applicants in Bundesländer
Hamburg and Schleswig-Holstein)

Appendix III

Statistics: *)

1. Higher education institutions according to type and Land

Land	Winter-semester	Higher education institutions							
		Total	including						
			Comprehensive Universities	Universities	Independent colleges of education	Theological institutions of higher education	Art academies	Fachhochschulen excluding verw.-interne FH	Verwaltungs-interne Fachhochschulen
BW[1]	1975	56	—	9	10	—	7	28	2
	1986	61	—	9	6	1	7	30	6
BA	1975	28	4	7	—	2	5	10	—
	1986	32	—	11	—	3	5	12	1
HE	1975	22	1	4	—	4	3	10	—
	1986	24	1	4	—	3	3	9	4
LS	1975	21	—	8	1	—	2	10	—
	1986	24	—	10	—	—	2	11	1
NW	1975	39	6	9	3	3	4	14	—
	1986	46	6	10	—	6	4	16	4
RP	1975	8	—	3	1	1	—	3	—
	1986	14	—	6	—	2	—	3	3
SA	1975	5	—	1	1	—	1	2	—
	1986	5	—	1	—	—	1	2	1
SH	1975	9	—	2	2	—	1	4	—
	1986	12	—	3	2	—	1	5	1
BE	1975	11	—	2	1	1	1	5	1
	1986	10	—	2	—	1	1	5	1
BR	1975	7	—	1	—	—	—	6	—
	1986	5	—	1	—	—	—	3	1
HA	1975	7	—	3	—	—	2	2	—
	1986	9	—	4	—	—	2	2	1
FA	1975	213	11	49	19	11	26	94	3
	1980	229	9	55	13	11	26	95	20
	1981	234	9	55	13	12	26	96	23
	1982	234	9	56	13	12	26	94	24
	1983	238	9	57	13	15	26	94	24
	1984	238	9	58	11	15	26	95	24
	1985	241	8	59	11	15	26	98	24
	1986	242	7	61	10	16	26	98	24

1) BW = Baden-Württemberg BA = Bavaria HE = Hesse LS = Lower Saxony NW = Northrhine-Westphalia
RP = Rhineland-Palatinate SA = Saarland SH = Schleswig-Holstein BE = Berlin (West) BR = Bremen
HA = Hamburg FA = Total federal area

*) All statistics have been taken from *Grund- und Strukturdaten* 1987/88. See Bibliography.

2. Students according to type of higher education institution

Year[1]	Students					
	Total		including			
			Universities	Art academies	Fachhochschulen	
					Total	including verwaltungs-interne FH
	Thousands	Percent[2]	Thousands			
			Germans and foreigners			
1960	291.1	4.3	238.4	8.5	44.2	—
1965	384.4	6.6	299.7	8.7	76.0	—
1970	510.5	9.5	410.1	10.9	89.5	—

2. Students according to type of higher education institution (continued)

Year[1]	Students					
	Total		including			
			Universities	Art academies	Fachhochschulen	
					Total	including verwaltungsinterne FH
	Thousands	Percent[2]	Thousands			
			Germans and foreigners			
1975	840.8	14.1	680.2	15.4	145.2	2.9
1976	877.3	14.7	705.0	15.3	157.1	5.1
1977	913.3	15.0	732.7	15.4	165.4	10.2
1978	945.9	15.2	756.9	16.2	172.8	13.4
1979	983.6	15.3	784.2	17.0	182.4	18.2
1980	1044.2	15.9	823.9	18.3	202.0	27.0
1981	1121.6	16.4	877.9	19.1	224.7	32.3
1982	1203.1	17.1	931.9	19.9	251.4	35.2
1983	1273.2	17.8	976.6	20.4	276.1	34.5
1984	1314.2	18.0	1001.1	21.0	292.1	33.4
1985	1338.0	18.1	1015.1	21.7	301.3	32.4
1986	1367.7	18.3	1033.2	22.0	312.5	33.1
			Germans			
1960	269.3	•	218.6	7.7	43.0	—
1965	357.8	•	276.9	7.6	73.3	—
1970	482.1	•	386.8	9.4	85.9	—
1975	792.1	14.7	640.9	13.1	138.0	2.9
1976	827.4	15.1	665.1	13.1	149.2	5.1
1977	862.1	15.4	691.4	13.2	157.4	10.2
1978	893.7	15.6	715.5	14.0	164.2	13.4
1979	927.0	15.7	739.1	14.7	173.2	18.2
1980	986.3	16.2	777.7	16.0	192.6	27.0
1981	1059.6	16.9	828.7	16.8	214.1	32.3
1982	1136.9	17.6	879.4	17.5	240.0	35.2
1983	1203.6	18.2	921.9	18.1	263.5	34.5
1984	1242.2	18.5	944.8	18.7	278.8	33.4
1985	1263.7	18.6	956.9	19.3	287.5	32.4
1986	1290.5	18.9	972.5	19.7	298.3	33.1

1) Winter Semester
2) As a percentage of the 19 to under 26 year olds.

3. First-year students according to type of higher education institution

Year[1]	First-year students					
	Total		including			
			Universities	Art academies	Fachhochschulen	
					Total	including verwaltungsinterne FH
	Thousands	Percent[2]	Thousands			
			Germans and foreigners			
1960	79.4	7.9	60.0	2.6	16.8	—
1965	85.7	13.3	61.3	2.5	21.9	—
1970	125.7	15.4	91.6	3.4	30.5	—
1975	166.6	19.5	119.9	2.8	43.8	1.4
1976	168.1	19.1	119.0	2.6	46.5	3.0
1977	165.5	18.3	118.2	2.7	44.5	3.6

3. First-year students according to type of higher education institution (continued)

Year[1]	First-year students					
	Total		including			
			Universities	Art academies	Fachhochschulen	
					Total	including verwaltungsinterne FH
	Thousands	Percent[2]	Thousands			
			Germans and foreigners			
1978	172.5	18.4	125.3	3.3	43.9	4.3
1979	177.7	18.2	125.2	3.0	49.6	7.8
1980	195.0	19.1	135.6	3.1	56.3	11.5
1981	216.6	20.9	151.5	3.0	62.1	11.1
1982	225.1	21.3	155.2	3.1	66.8	10.6
1983	233.0	21.5	160.1	2.9	69.9	9.7
1984	221.3	20.6	151.5	2.9	66.9	9.1
1985	207.7	19.5	141.3	3.0	63.4	9.9
1986	210.8	20.2	142.7	2.7	65.4	10.4
			Germans			
1960	74.2	•	55.6	2.3	16.3	—
1965	80.3	•	57.4	2.1	20.8	—
1970	119.8	•	87.5	2.9	29.4	—
1975	155.9	19.6	111.8	2.3	41.8	1.4
1976	157.4	19.0	110.8	2.1	44.5	3.0
1977	154.7	18.2	109.8	2.2	42.6	3.6
1978	161.4	18.3	116.9	2.6	41.9	4.3
1979	165.3	18.1	115.6	2.5	47.3	7.8
1980	183.2	19.5	126.3	2.6	54.2	11.5
1981	203.7	21.2	141.5	2.6	59.6	11.1
1982	211.9	21.6	145.0	2.6	64.3	10.6
1983	219.7	21.9	149.9	2.5	67.3	9.7
1984	207.0	20.8	140.1	2.4	64.4	9.1
1985	192.9	19.7	129.3	2.4	61.2	9.9
1986	196.7	20.5	131.2	2.3	63.2	10.4

1) Summer and following Winter Semester 2) Percent of average year group of 19 to under 21 year olds

Year	Female first-year students					
	Total		including			
			Universities	Art academies	Fachhochschulen	
					Total	including verwaltungsinterne FH
	Thousands	Percent	Thousands			
			Germans and foreigners			
1960	21.4	4.4	20.4	1.0	•	—
1965	25.4	8.1	24.4	1.0	•	—
1970	36.2	9.1	34.9	1.3	•	—
1975	61.0	14.6	49.2	1.3	10.5	0.4
1976	58.2	13.5	45.7	1.1	11.4	1.1
1977	64.2	14.6	50.4	1.3	12.5	1.4
1978	68.7	15.1	53.7	1.5	13.5	1.8
1979	69.1	14.5	51.9	1.4	15.8	3.0
1980	78.1	15.8	58.8	1.4	17.9	4.3
1981	90.0	17.9	68.5	1.4	20.1	4.5
1982	90.9	17.7	68.3	1.5	21.1	4.3
1983	88.0	16.8	66.0	1.5	20.6	3.9
1984	85.0	16.3	63.9	1.4	19.7	3.8
1985	82.5	16.0	61.2	1.5	19.8	4.3
1986	84.7	16.6	62.4	1.3	20.9	4.6

4. Students at Fachhochschulen according to subject groups and sex

Subject group Sex	Students					
	1986		1985	1975	Change in 1986 compared with 1985	
	Number	Percent	Percent		Number	Percent
Linguistics, cultural studies, sport						
male	1,040	0.5	0.5	0.9	15	1.5
female	3,752	4.2	4.1	5.4	114	3.1
Total	4,792	1.5	1.5	1.9	129	2.8
Law, economics and social sciences in toto						
male	61,771	27.8	27.9	26.5	2,095	3.5
female	51,592	57.2	58.3	58.3	1,684	3.4
Total	113,363	36.3	37.1	33.8	3,779	3.5
Excluding Verwaltungsinterne Fachhochschulen						
male	43,077	19.4	19.1	24.7	2,049	5.0
female	37,855	42.0	42.7	55.7	1,107	3.0
Total	80,932	25.9	25.9	31.8	3,156	4.1
Verwaltungsinterne Fachhochschulen						
male	18,694	8.4	8.7	1.8	46	0.3
female	13,737	15.2	15.6	2.6	577	4.4
Total	32,431	10.4	11.2	2.0	623	2.0
Mathematics and natural sciences						
male	12,364	5.6	5.3	2.4	1,075	9.5
female	3,475	3.9	3.6	1.7	365	11.7
Total	15,839	5.1	4.6	2.3	1,440	10.0
Agriculture, forestry and food science						
male	5,521	2.5	2.5	2.4	141	2.6
female	4,806	5.3	5.1	3.7	129	2.8
Total	10,327	3.3	3.3	2.7	270	2.7
Engineering sciences						
male	135,630	61.0	61.2	64.3	4,480	3.4
female	18,744	20.8	20.5	18.7	554	3.1
Total	154,374	49.4	49.1	53.9	5,034	3.4
Art, fine arts						
male	5,896	2.6	2.7	3.6	155	2.7
female	7,787	8.6	8.4	12.2	303	4.1
Total	13,683	4.4	4.4	5.5	458	3.5

5. Foreign students[1] according to the country of their nationality and the country of their permanent residence in 1986

Country of nationality	Foreign students				
	Total	with permanent domicile			
		Abroad		In federal area	
		Total	Including country of nationality		
	Number		Percent	Number	Percent
		Europe			
EG-countries in toto	18,629	9,257	95.1	9,372	50.3
including					
Belgium	519	284	95.1	235	45.3
Denmark	250	108	88.9	142	56.8
France	2,481	1 517	93.2	964	38.9
Greece	6,254	3,520	98.5	2,734	43.7

5. Foreign students[1] according to the country of their nationality and the country of their permanent residence in 1986 (continued)

Country of nationality	Foreign students				
	Total	with permanent domicile			
		Abroad		In federal area	
		Total	Including country of nationality		
	Number		Percent	Number	Percent
		Europe			
Great Britain and Northern Ireland	1,953	970	87.6	983	50.3
Ireland	183	124	94.4	59	32.2
Italy	2,112	784	94.4	1,328	62.9
Luxembourg	1,013	883	97.5	130	12.8
Netherlands	1,836	379	88.1	1,457	79.4
Portugal	429	143	95.1	286	66.7
Spain	1,599	545	96.1	1,054	65.9
Other countries in toto	22,141	9,402	96.8	12,739	57.5
including					
Bulgaria	113	36	94.4	77	68.1
Finland	676	479	97.5	197	29.1
Iceland	218	185	95.1	33	15.1
Yugoslavia	1,922	596	97.8	1,326	69.0
Norway	764	663	97.9	101	13.2
Austria	3,943	1,117	95.9	2,826	71.7
Poland	1,504	666	98.0	838	55.7
Romania	210	28	92.9	182	86.7
Sweden	457	239	95.4	218	47.7
Switzerland	1,253	657	96.2	596	47.6
Soviet Union	75	11	81.8	64	85.3
Czechoslovakia	570	52	88.5	518	90.9
Turkey	9,362	4,009	96.7	5,353	57.2
Hungary	333	69	95.7	264	79.3
Cyprus	714	585	98.3	129	18.1
Other countries	27	10	60.0	17	63.0
Total	40,770	18,659	96.0	22,111	54.2

1) Winter Semester

		Africa			
Egypt	715	530	98.3	185	25.9
Algeria	325	247	96.8	78	24.0
Ghana	264	184	97.8	80	30.3
Nigeria	262	178	99.4	84	32.1
Other countries	2,947	1,917	95.8	1,030	35.0
Total	4,513	3,056	96.7	1,457	32.3
		America			
Argentina	264	159	95.6	105	39.8
Brazil	575	412	97.6	163	28.3
Chile	535	250	96.8	285	53.3
Canada	433	235	93.6	198	45.7
Colombia	328	243	93.8	85	25.9
Peru	417	287	97.6	130	31.2
USA	4,161	2,277	97.1	1,884	45.3
Other countries	1,067	724	96.0	343	32.1
Total	7,780	4,587	96.6	3,193	41.0

5. Foreign students[1] according to the country of their nationality and the country of their permanent residence in 1986 (continued)

Country of nationality	Foreign students				
	Total	with permanent domicile			
		Abroad		In federal area	
		Total	Including country of nationality		
	Number		Percent	Number	Percent
		Asien			
Afghanistan	694	349	97.7	345	49.7
China (Taiwan)	608	477	95.8	131	21.5
China (People's Republic)	1,560	1,284	98.8	276	17.7
India	584	402	97.8	182	31.2
Indonesia	2,138	1,659	96.4	479	22.4
Iraq	384	213	93.9	171	44.5
Iran	8,239	5,704	96.2	2,535	30.8
Israel	727	499	98.6	228	31.4
Japan	1,147	902	98.8	245	21.4
Jordan	981	744	77.8	237	24.2
Korea (Republic)	3,038	2,338	98.0	700	23.0
Lebanon	317	221	93.7	96	30.3
Syria	451	315	96.8	136	30.2
Thailand	226	157	98.1	69	30.5
Vietnam	971	182	92.3	789	81.3
Other countries	853	613	92.8	240	28.1
Total	22,918	16,059	95.9	6,859	29.9
		Australia and Oceania			
Total	159	81	91.4	78	49.1
		All countries			
Total	77,374	42,778	95.5	34,596	44.7

6. Length of studies with successfully passed examination by German students according to type of higher education institution, sex and age

Type of higher education institution	Key-	Duration of studies in years (average) on taking final examination					Age on taking final examination
		1977	1979	1981	1983	1985	
Universities	Abs	6.9	7.0	7.2	7.4	7.5	28.3
	HS	6.1	6.3	6.5	6.7	6.9	
	FS	5.4	5.5	5.7	5.8	6.1	
Comprehensive universities	Abs	4.4	4.9	5.5	6.0	6.5	28.0
	HS	4.1	4.7	5.1	5.3	6.2	
	FS	3.6	4.2	4.5	4.6	5.5	
Including short study courses	Abs	4.3	4.3	4.1	4.7	5.0	26.7
	HS	4.3	4.3	4.0	4.6	5.0	
	FS	3.9	4.0	3.6	4.2	4.7	
Independent colleges of education	Abs	4.7	5.2	5.3	5.6	5.8	26.8
	HS	4.2	4.7	4.7	4.9	4.9	
	FS	3.6	3.9	3.7	4.0	3.9	
Theological colleges	Abs	6.3	6.7	6.4	7.0	6.8	27.2
	HS	5.7	5.8	5.9	6.6	6.4	
	FS	5.2	5.4	5.3	5.8	5.7	

6. Length of studies with successfully passed examination by German students according to type of higher education institution, sex and age (continued)

Type of higher education institution	Key-	Duration of studies in years (average) on taking final examination					Age on taking final examination
		1977	1979	1981	1983	1985	
Art academies	Abs	5.9	5.8	6.3	6.2	6.4	26.9
	HS	5.5	5.7	6.0	6.0	6.2	
	FS	4.5	4.6	4.7	4.8	5.0	
Fachhochschulen	Abs	3.8	4.0	4.2	4.5	4.6	26.6
(not including Verwaltungs-FH)	HS	3.7	4.0	4.1	4.5	4.5	
	FS	3.5	3.7	3.8	4.1	4.1	
Verwaltungsinterne	Abs	•	•	•	3.1	3.2	26.2
Fachhochschulen	HS	•	•	•	3.1	3.1	
	FS	•	•	•	2.9	3.0	
Total — male	Abs	6.0	6.2	6.4	6.6	6.6	28.2
	HS	5.4	5.6	5.9	6.0	6.1	
	FS	4.8	4.9	5.1	5.3	5.4	
— female	Abs	5.0	5.4	5.8	6.0	6.1	26.8
	HS	4.6	5.0	5.4	5.5	5.7	
	FS	4.1	4.6	4.8	4.9	5.2	
— Altogether	Abs	5.6	5.9	6.2	6.3	6.4	27.7
	HS	5.1	5.4	5.7	5.8	6.0	
	FS	4.5	4.8	5.0	5.1	5.3	
Verwaltungsinterne	Abs	•	•	•	3.1	3.2	26.2
Fachhochschulen	HS	•	•	•	3.1	3.1	
	FS	•	•	•	2.9	3.0	
Total — male	Abs	6.0	6.2	6.4	6.6	6.6	28.2
	HS	5.4	5.6	5.9	6.0	6.1	
	FS	4.8	4.9	5.1	5.3	5.4	
— female	Abs	5.0	5.4	5.8	6.0	6.1	26.8
	HS	4.6	5.0	5.4	5.5	5.7	
	FS	4.1	4.6	4.8	4.9	5.2	
— Altogether	Abs	5.6	5.9	6.2	6.3	6.4	27.7
	HS	5.1	5.4	5.7	5.8	6.0	
	FS	4.5	4.8	5.0	5.1	5.3	

Footnote:
Abs = Duration of studies from initial matriculation to completion of final examination
HS = Duration of studies according to higher education institution semesters
FS = Duration of studies according to subject semesters

A *Fachhochschule* glossary

Akademisches Auslandsamt: the office at higher education institutions concerned with international cooperation: it looks after foreign students and procures study places abroad for German students.

Allgemeine Hochschulreife: this Certificate of General Qualification (Zeugnis der allgemeinen Hochschulreife) is generally obtained following the passing of the Abiturprüfung (known also as Reifeprüfung) at a Gymnasium after the completion of 13 successive school years (including 4 years primary school). It grants admission to all institutions of higher education in any subject in the Federal Republic of Germany.

Bund-Länder-Kommission für Bildungsplanung und Forschungsförderung: a joint commission set up by the Bundesländer (states) and the Bund (Federal Government) at government level

to deal with important current questions in education policy, and the coordination of research planning and budgets within the field of research.

Deutscher Akademischer Austauschdienst (DAAD): a higher education institution organization for the promotion of higher education relations with other countries. It is financed almost exclusively by federal funds. It provides information on possibilities of study in the Federal Republic of Germany and abroad, and, under the terms of specific programmes, awards scholarships to foreign and German students and scientists (scholars, academics).

Diplom: an academic degree which is awarded on passing the final examination on conclusion of studies, particularly in the engineering, economic and social sciences. The Diplom degrees awarded by Fachhochschulen have the suffix "FH".

Drittmittelforschung: the carrying out of research projects financed from third-party sources (e.g. foundations, industrial enterprises etc.) and not from budgetary funds available to the higher education institution concerned.

Fachhochschulreife: the Certificate of the Fachhochschulreife is, as a rule, issued at Fachhochschulen following the passing of a final examination after 12 successive school years (including 4 years at primary school). It qualifies students for admission to courses of study at Fachhochschulen and similar courses at Gesamthochschulen.

Gesamthochschule: this type of higher education institution was set up around 1970; it combines duties in research and teaching found normally at universities, Pädagogische Hochschulen (teachers training colleges/colleges of education) and Fachhochschulen. In the "integrated study courses" students can conclude their studies after varying periods of time with varying Diplom degree examinations.

Hochschulrahmengesetz (HRG): the Federal Framework Act for Higher Education which came into force in 1976 and was amended in 1985, regularizes the framework provisions governing higher education in general for the Bundesländer and their laws.

Kultusministerkonferenz (KMK): the Conference of the Ministers of Education and Cultural Affairs was set up by the Bundesländer for purposes of consultation and self-coordination in education policy. There is a special Hochschulausschuß (committee) for questions regarding Hochschulpolitik (higher education policy).

Praxissemester: vocational-practical training during studies at a Fachhochschule. These practical periods, which last one to two semesters outside the higher education institution, have to be coordinated, both in regard to subject matter and length of time, with the remaining parts of the study course, and, wherever possible, fitted into the study course itself.

Studies: these are basically provided in the form of study courses, i.e. a combination of one or more subjects with a specific final examination. The content and structure of study courses (e.g. the pattern of Grundstudium/basic segment and Hauptstudium/main segment, types of teaching events, especially Vorlesungen/lectures, Übungen/practical sessions, seminars and courses) as well as possible studies in depth or with a particular bias are regularized by examination regulations, study regulations and study schedules.

Westdeutsche Rektorenkonferenz: an organization in which higher education institutions of all types work together to fulfil their commitments and deal with matters of common interest.

Wissenschaftsrat: the Science Council was set up by the Bund (Federal Government) and the Bundesländer (states) as an advisory body to make recommendations on the structural development of higher education institutions, investments in the higher education field and matters concerning the advancement of research. With an equal number of votes, the members come from the field of science (Wissenschaft) and the federal and Bundesländer governments.

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